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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,976	12/27/2000	Takashi Kitae	56937-022	3643

7590 09/30/2002

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EXAMINER

PAREKH, NITIN

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 09/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
**09/747,976**

Applicant(s)

**Kitae et al**

Examiner

**Nitin Parekh**

Art Unit

**2811**



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Jul 18, 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above, claim(s) 5 and 10-17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-8, 18, 20, 22, 24, and 26 is/are allowed.
- 6) ☒ Claim(s) 1-3, 9, 19, 21, 23, 25, and 27 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claims are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2 6) ☐ Other:

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## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 19-26 are objected to because of the following informalities:

Claims 19-22, line 2: Delete "0.1m to 10.0 m" and insert---"0.1 micron to 10.0 micron"--.

Claims 23-26, line 2: Delete "0.1m to 5.0 m" and insert---"0.1 micron to 5.0 micron"--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. Claims 1-3, 9, 19, 21, 23, 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda (US Pat. 6262785) in view of Sano et al (US Pat. 5822176) and Kodama et al (US Pat. 5277723).

Regarding claim 1, Ikeda discloses an electronic part mounting element comprising:

- an electronic part (3 in Fig. 1)
- an external electrode (5 in Fig. 1) formed at both ends of the part,
- a coating/layer comprising conductive adhesive/resin ingredients being formed/coated/disposed on both ends/entire surface of the external electrodes (11 in Fig. 3 and 4; Col. 3, line 10-33), the conductive adhesive layer containing conductive filler consisting of metals such as silver (Ag), palladium (Pd), copper (Cu), etc (Col. 2, line 57), and
- a connecting element comprising the coating/conductive adhesive (11 in Fig. 1; Col. 3, line 29) electrically connecting the external electrode and connecting terminals (9 in Fig. 1; Fig. 2-4; Col. 2, line 30- Col. 3, line 35), the coating being operative as a connecting element between the external electrodes and the connecting terminals

Ikeda further discloses the conductive adhesive layer/coating comprising a conventional epoxy/thermosetting adhesive/resin (Col. 3, line 30) containing ingredients such as

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filler/metals consisting silver and palladium but fail to specify using metal or an alloy/mixture consisting of silver, palladium, gold, platinum, nickel or zinc.

Sano et al teach using a conductive resin/paste containing conventional filler/metals or alloys of silver, palladium, gold, nickel, tin, etc. to form external electrodes (Col. 6, line 23-43).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to incorporate the coating including a thermosetting or thermoplastic resin and the conductive filler consisting of metal, an alloy or mixture of silver, palladium, gold, platinum, nickel or zinc so that the conductivity and bonding strength can be improved using Sano et al's electrode design in Ikeda's electronic part.

Regarding claims 2, 3 and 9, the claim elements have been addressed in the rejection as explained above for claim 1.

Regarding claim 19, as explained above for claim 1, Ikeda in view of Sano et al fail to specify the surface roughness (Ra) of the external electrode being set in a range of 0.1-10.0 microns or 1.0-5.0 microns.

Kodama et al teach using electronic parts comprising an internal and external wiring/conductors on inside and side surfaces where external surface has Ra value of

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about 1.0 micron or preferably 2.0 microns (Fig. 7c, 5c, 3c, etc.; Col. 7, line 35- Col. 8, line 20; Col. 11, line 35- Col. 12, line 55). Kodama et al further teach achieving the optimum Ra value by controlling the parameters such as firing shrinkage ratio, temperature, pressure, pore size of the material used for applying the pressure, etc. (Col. 11, line 50; Col. 8-12).

Furthermore, the parameters such as a range of roughness of internal/external surfaces, shape of the external surface/electrode layer (convex, concave, etc.), pore size and thickness of various layers, etc. are a subject of routine experimentation and optimization in electronic/chip part fabrication technology art to achieve the desired bonding strength, adhesion and reliability.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to arrive at a surface roughness (Ra) range of the external electrode surface being 0.1-10.0 microns or 1.0-5.0 microns so that the adhesion, bonding strength and reliability can be improved using Kodama et al and Sano et al's structures in Ikeda's electronic part.

Regarding claims 21, 23, 25 and 27, the claim elements have been addressed in the rejection as explained above for claims 1 and 19.

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***Allowable Subject Matter***

3. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. Claims 6-8, 18, 20, 22, 24 and 26 are allowed.

5. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach an electronic part mounting element comprising an external electrode; a coating comprising conductive adhesive resin ingredients being disposed on an entire surface of the external electrode, the conductive adhesive layer containing conductive filler; a connecting element comprising the conductive adhesive electrically connecting the external electrode and connecting terminals, the coating being operative as a connecting element between the external electrodes and the connecting terminals, wherein the thickness of the coating is less than the particle diameter of the conductive filler.

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***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Papers related to this application may be submitted directly to Art Unit 2811 by facsimile transmission. Papers should be faxed to Art Unit via Technology Center 2800 fax center located in Crystal Plaza 4, room 4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989).



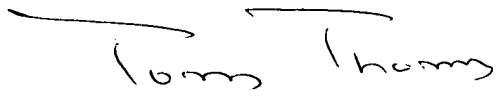
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nitin Parekh whose telephone number in (703) 3053410. The examiner can be normally reached on Monday-Friday from 08:30 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached on (703) 308-2772. The fax number for the organization where this application or proceeding is assigned is (703) 308-7722 or 7724.

Nitin Parekh

09-27-02

  
TOM THOMAS  
SUPERVISORY PATENT EXAMINER  
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